

CLAIMS:

1. A fluid sampling probe for aspirating fluid samples comprising:
a first portion for piercing a closed fluid carrier,
5 a second portion serving as a reservoir for receiving a fluid, the second portion being formed integrally operative with the first portion, and
a third portion providing fluid communication between the first and second portion.
- 10 2. A probe as claimed in claim 1, wherein the second portion comprises a disposable moulded reservoir having a capacity sufficient for containing a sample volume of fluid.
3. A probe as claimed in claim 1 or 2, wherein the first portion comprises the
15 piercing head of a relatively small diameter hypodermic needle.
4. A probe as claimed in claim 3, wherein the needle gauge of the hypodermic needle is in the range of 12-20 AWG
- 20 5. A probe as claimed in claim 2, 3 or 4, wherein the disposable reservoir is joined to the first portion by a UV cured adhesive joint such that the probe forms a disposable combination for single use.
6. A probe as claimed in claim 3, 4 or 5, wherein the second portion
25 comprises a disposable moulded reservoir of one of a plurality of sizes to accommodate a range of sample volumes.
7. A probe as claimed in claim 1, wherein the first portion is moveable with respect to the second portion such that, upon disengaging with the second
30 portion, a fluid flow path from the carrier to the second portion is formed between a distal end of the second portion and the head of the first portion.

8. A probe as claimed in claim 1 or 7, wherein the first portion comprises the head of a trocar needle.
9. A probe as claimed in claim 8, wherein the second portion comprises a cannular needle for accommodating a relatively small diameter shaft of the trocar needle therewithin such that the second portion is defined by a wall of the cannular needle acting as an outer envelope for the received fluid.
10. A probe as claimed in any one of claims 1 to 9, wherein the second portion is a hollowed vessel.
11. A probe as claimed in any one of claims 1 to 6, wherein the probe is disposable.
12. An automated fluid sampling system comprising:
a handling mechanism for conveying a plurality of closed fluid carriers;
a fluid sampling station for receiving and locating the fluid carriers conveyed by the handling mechanism, and wherein the system is adapted to operatively accommodate a fluid sampling probe as claimed in any one of claims 1 to 11.
13. A probe as claimed in any one of claims 1 to 6 or 11 wherein the second portion is adapted at one end thereof to form a mechanical connection between the fluid sampling probe and a fluid sampling system as claimed in claim 12.
14. A probe as claimed in claim 13 wherein the second portion comprises a Luer fitting for forming the mechanical connection between the fluid sampling probe and the fluid sampling system.
15. A method of sampling a fluid from a closed fluid carrier using a probe as claimed in any one of claims 1 to 11, the method comprising the steps of:
(a) piercing the closed fluid carrier with a portion of the probe;

(b) advancing a first portion of the probe into contact with the fluid of the carrier;

(c) forming a fluid flow path between the fluid of the carrier and a second and/or third portion of the probe;

5 (d) aspirating a sample volume of the fluid along the fluid flow path;

(e) retaining the sample volume of fluid within the second and/or third portion of the probe upon withdrawal of the probe from the carrier.

10 16. A method as claimed in claim 15, wherein a trocar needle is used for step (e).

17. A method as claimed in claim 15 or 16, further comprising the step of:
(f) using the probe to dispense the sample as required.

15 18. A method as claimed in claim 15, 16, or 17 further comprising the step of:
(g) disposing of the fluid sampling probe.

19. A method as claimed in claim 18, further comprising the step of:
(h) exchanging the disposed probe with one of a plurality of probes having
20 a range of second portion sizes and/or shapes, and;
(i) repeating steps (a) to (g).

20. A method as claimed in claim 15 wherein, step (c) further comprises the
step of axially extending the first portion from sealed engagement with the second
25 portion to form the fluid flow path.

21. A method as claimed in claim 15 or 20 wherein, step (e) further comprises
the step of axially retracting the first portion to sealingly engage the second
portion prior to withdrawal of the probe from the carrier.

22. A method of integrally combining a first and second portion of a probe as claimed in any one of claims 1 to 11, the method comprising the step of:
attaching the first and second portions together by a UV cured adhesive joint.

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23. A method of integrally combining a first and second portion of a probe as claimed in any one of claims 1 to 11, the method comprising the step of:
synthesizing the first and second portions together as a one piece integrally moulded part.

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24. A method as claimed in claim 22, further comprising the step of:
integrating a third portion intermediate to the first and second portions wherein, the step of integrating comprises adhesively joining the shaft of a hypodermic needle to a base portion of a moulded reservoir with a UV light cured adhesive,

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25. A method as claimed in claim 23, further comprising the step of integrating a third portion intermediate the first portion wherein, the step of integrating comprises forming a fluid flow channel between the second portion and an external aperture adjacent the first portion.

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26. Apparatus adapted to integrally combine a first and second portion of a probe, said apparatus comprising:

processor means adapted to operate in accordance with a predetermined instruction set,

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said apparatus in conjunction with said instruction set, being adapted to perform the method of any one of claims 22 to 25.

27. Apparatus adapted to sample a fluid from a closed fluid carrier using a probe, said apparatus comprising:

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processor means adapted to operate in accordance with a predetermined instruction set,

said apparatus, in conjunction with said instruction set, being adapted to perform the method of any one of claims 15 to 21.

28. Apparatus for sampling fluid from a closed fluid carrier, the apparatus being adapted to operate in accordance with the method as claimed in any one of claims 15 to 21.

29. A computer program product comprising:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for sampling a fluid from a closed fluid carrier within a data processing system, said computer program product comprising:

computer readable code within said computer usable medium for performing the method steps of any one of claims 15 to 21.

30. A computer program product comprising:

a computer usable medium having computer readable program code and computer readable system code embodied on said medium for integrally combining a first and second portion of a probe within a data processing system, said computer program product comprising:

computer readable code within said computer usable medium for performing the method steps of any one of claims 22 to 25.

31. A system as claimed in claim 12 wherein the sampling probe comprises a trocar needle having a head and a shaft, the shaft being hollow for enclosing a sample volume within and for dispensing the sample as required.

32. A device, system, apparatus or probe substantially as herein described with reference to at least one of the accompanying drawings.

33. A method substantially as herein described with reference to at least one of the accompanying drawings.